

**Course Title:** Pre-Algebra A

**Topic/Concept:** Fundamentals of Algebra

**Time Allotment:** 26 Days

**Unit Sequence:** 1

**Major Concepts to be learned:**

1. To evaluate numerical and algebraic expressions. (1-1)
2. To write algebraic expressions. (1-2)
3. To solve one-step equations and inequalities using addition, subtraction, division, and multiplication. (1-3, 1-4, 1-5)
4. To simplify algebraic expressions by combining like terms. (1-6)
5. To write solutions of equations in two variables as ordered pairs. (1-7)
6. To graph points and lines on a coordinate plane. (1-8)

**Expected Skills to be demonstrated:**

1. Students will use the order of operations to evaluate both algebraic and numerical expressions.
2. Substitutions of values for variables will be used.
3. To show the steps necessary to solve one-step equations by using inverse operations and properties of equality.
4. To simplify algebraic expressions that contain like terms by applying rules for adding and subtracting like terms.
5. Graph ordered pairs and linear equations on the coordinate plane.

**PA Standards/Anchors:**

**Eligible Content:**

CC.2.2.7.B.1	M07.B-E.1
CC.2.2.7.B.3	M07.B-E.2

M07.B-E.1.1.1
M07.B-E.2.1.1
M07.B-E.2.2.2
M07.B-E.2.3.1

**Instructional Strategies:**

**Assessments:**

Cooperative groups	Problem solving activities
Lecture	Performance task
Hands-on activity	Note Taking
Math Binders	Graphic Calculators

Math binder
Test and quizzes
Open-ended question

**Course Title:** Pre-Algebra A

**Topic/Concept:** Integers

**Time Allotment:** 25 Days

**Unit Sequence:** 2

**Major Concepts to be learned:**

1. Perform the major operations on integers. (2-1, 2-2, 2-3)
2. Solve equations and inequalities containing integers. (2-4, 2-5)

**Expected Skills to be demonstrated:**

1. Students will be able to evaluate numerical expressions with integers for addition, subtraction, division, and multiplication.
2. Students will solve equations and inequalities involving integers by applying the properties of equality.

**PA Standards/Anchors:**

**Eligible Content:**

CC.2.1.7.E.1	M07.A-N.1	M07.A-N.1.1.1 M07.A-N.1.1.2 M07.A-N.1.1.3
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**Instructional Strategies:**

**Assessments:**

Problem solving activities Group discussion Hands-on activity Summarizing	Lecture Calculators Note Taking Math Binders	Math binders Test and quizzes Open-ended questions
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**Course Title:** Pre-Algebra A

**Topic/Concept:** Real Number System

**Time Allotment:** 18 Days

**Unit Sequence:** 3

**Major Concepts to be learned:**

1. To write rational numbers in equivalent forms. (3-1)
2. Perform the basic operations on real numbers. (3-2, 3-3, 3-4, 3-5)

**Expected Skills to be demonstrated:**

1. Students will perform the operations of addition, subtraction, division, and multiplication, with decimals and fractions (both like/unlike denominators and mixed numbers).
2. Students will use the properties of equality to solve equations and inequalities containing rational numbers.

**PA Standards/Anchors:**

**Eligible Content:**

CC.2.1.7.E.1	M07.A-N.1	M07.A-N.1.1.1 M07.A-N.1.1.2 M07.A-N.1.1.3
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**Instructional Strategies:**

**Assessments:**

Problem solving activities Group discussion Note Taking Evaluating Graphic Calculators	Lecture Hands-on activity Graphic organizers Math Binders	Math binders Test and quizzes Open-ended question
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**Course Title: Pre-Algebra A**

**Topic/Concept: Statistics & Data Analysis**

**Time Allotment: 11 Days**

**Unit Sequence: 4**

**Major Concepts to be learned:**

1. Collect and analyze data. (4-1, 4-2)
2. Determine the measures of central tendency. (4-3)
3. Determine the measures of variance. (4-4)
4. Display data in various graphical forms. (4-5)
5. Examine misleading statistics. (4-6)

**Expected Skills to be demonstrated:**

1. Collect data and determine/construct an appropriate graphical display.
2. Determine mean, median, and mode for a given set of data and determine which is most reflective for the dataset.
3. Calculate quartiles and the range for a given data set.
4. Be able to explain how a graphical display is misleading.
5. Determine from a given set of data, what type of relationship exists, if any, and use that data to make predictions.

**PA Standards/Anchors:**

**Eligible Content:**

CC.2.4.7.B.1	M07.D-S.1	M07.D-S.1.1.1
CC.2.4.7.B.2	M07.D-S.2	M07.D-S.1.1.2
		M07.D-S.2.1.1

**Instructional Strategies:**

**Assessments:**

Cooperative groups	Problem solving activities	Math binders
Lecture	Group discussion	Test, quizzes, and project (using a given data set)
Performance task	Written work	Open-ended questions
Hands-on activity	Note Taking	
Charting	Summarizing	
Evaluating	Math Binders	
Graphic Calculators		

**Course Title:** Pre-Algebra A

**Topic/Concept:** Basic Geometry

**Time Allotment:** 13 Days

**Unit Sequence:** 5

**Major Concepts to be learned:**

1. Basic identification and notation for points, lines, planes, and angles. (5-1)
2. Identification and application of angle relationships that arise from lines that are parallel or perpendicular. (5-2)
3. Identification of polygons and examination of similarities and differences among triangles and quadrilaterals. (5-3, 5-4)

**Expected Skills to be demonstrated:**

1. Measure angles using a protractor and classify what type of angle it is.
2. Given two parallel lines, a transversal, and an angle, determine the measurements for all other angles.
3. Classify triangles according to sides and angles.

**PA Standards/Anchors:**

**Eligible Content:**

CC.2.3.7.A.2

M07.C-G.1

M07.C-G.1.1.1

M07.C-G.1.1.2

M07.C-G.1.1.3

M07.C-G.1.1.4

**Instructional Strategies:**

**Assessments:**

Cooperative groups  
Lecture  
Written work  
Note Taking

Problem solving activities  
Performance task  
Hands-on activity  
Math Binders

Multiple projects  
Math binders  
Test and quizzes  
Lesson activities that allow for student exploration.

Course Title: Pre-Algebra A

Topic/Concept: Perimeter, Area, & Volume

Time Allotment: 12 Days

Unit Sequence: 6

**Major Concepts to be learned:**

1. Use and apply perimeter/area formulas for triangles and quadrilaterals. (6-1, 6-2)
2. Find area and circumference of circles. (6-4)
3. Find volume and surface area of solids. (6-6, 6-7, 6-8, 6-9, 6-10)

**Expected Skills to be demonstrated:**

1. To find the area for triangles, trapezoids, rectangles, and parallelograms.
2. To find the perimeter for triangles, trapezoids, rectangles, and parallelograms.
3. To determine the effect on perimeter and area when making changes to the original dimensions.
4. To calculate the circumference and area for circles.
5. To determine the effect on circumference and area of a circle when making changes to the radius or diameter.
6. To calculate volume and surface area for three-dimensional solids.
7. To examine the effects of changing a given measurement on the new volume/surface area when compared to the original.

**PA Standards/Anchors:**

CC.2.3.7.A.1                      M07.C-G.1  
CC.2.3.7.A.2                      M07.C-G.2

**Eligible Content:**

M07.C-G.1.1.1                      M07.C-G.2.2.1  
M07.C-G.1.1.2                      M07.C-G.2.2.2  
M07.C-G.1.1.3  
M07.C-G.1.1.4  
M07.C-G.2.1.1  
M07.C-G.2.1.2

**Instructional Strategies:**

**Assessments:**

Problem solving activities                      Lecture  
Group discussion                                      Performance task  
Hands-on activity                                      Note Taking  
Evaluating    Math Binders  
Graphic Calculators

Multiple projects  
Math Binders  
Tests and quizzes  
Student lesson exploration activities

Course Title: Pre-Algebra A

Topic/Concept: Ratios, Rates, & Proportions

Time Allotment: 11 Days

Unit Sequence: 7

**Major Concepts to be learned:**

1. To understand and use the concepts of ratio and proportion. (7-1, 7-2)
2. To use ratios to convert from one unit to another. (7-3)
3. To setup and solve proportions. (7-4)
4. To apply ratio and proportion to similar figures, dilations, and scale models. (7-5, 7-6, 7-7, 7-8)

**Expected Skills to be demonstrated:**

1. To determine if ratios are equivalent.
2. To express ratios as rates and units.
3. To use proportions to solve for unknown values.
4. To use the concept of proportionality to find dilations.
5. Use similar figures to determine the unknown values.
6. To convert from scale to actual and actual to scale.

**PA Standards/Anchors:**

**Eligible Content:**

CC.2.1.7.D.1	M07.A-R.1	M07.A-R.1.1.1 M07.A-R.1.1.2 M07.A-R.1.1.3 M07.A-R.1.1.4 M07.A-R.1.1.5 M07.A-R.1.1.6
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**Instructional Strategies:**

**Assessments:**

Cooperative groups Lecture Performance task Oral presentation Math Binders	Problem solving activities Group discussion Hands-on activity Note Taking Graphic Calculators	Tests and quizzes Math binders Scale model project in 2 and 3 dimensions
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Course Title: Pre-Algebra A

Topic/Concept: Percents

Time Allotment: 24 Days

Unit Sequence: 8

**Major Concepts to be learned:**

1. To convert among fractions, decimals, and percents. (8-1)
2. To find the rate, base, or percentage based on given information. (8-2, 8-3, 8-4)
3. To estimate with percents. (8-5)
4. To apply applications of percent of change to solve a variety of percent situations. (8-6, 8-7)

**Expected Skills to be demonstrated:**

1. To solve problems involving tax, discount, tips, and commission.
2. To find a percent one number is of another number.
3. To find a number when a percent is known.

**PA Standards/Anchors:**

**Eligible Content:**

CC.2.1.7.D.1	M07.A-R.1	M07.A-R.1.1.1 M07.A-R.1.1.2 M07.A-R.1.1.3 M07.A-R.1.1.4 M07.A-R.1.1.5 M07.A-R.1.1.6
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**Instructional Strategies:**

**Assessments:**

Cooperative groups Lecture Hands-on activity Math Binders	Problem solving activities Group discussion Note Taking Graphic Calculators	Tests & quizzes Math Binders
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Course Title: Pre-Algebra A

Topic/Concept: Probability

Time Allotment: 10 Days

Unit Sequence: 9

**Major Concepts to be learned:**

1. Find the probability of an event by using the definition of probability. (9-1)
2. Define, determine, and differentiate between experimental and theoretical probability. (9-2, 9-3, 9-4)
3. Find the number of possible outcomes in an experiment. (9-5)
4. Find permutations and combinations. (9-6)
5. Define and determine probabilities for independent and dependent events. (9-7)
6. Convert between probabilities and odds. (9-8)

**Expected Skills to be demonstrated:**

1. Find the experimental and theoretical probabilities for particular events.
2. Determine the number of arrangements of objects by determining if the situation is a combination or permutation.
3. Use the Fundamental Counting Principle to determine how many possibilities there are.
4. Determine the probability for independent and dependent events.
5. Convert from odds to probability and probability to odds.

**PA Standards/Anchors:**

**Eligible Content:**

CC.2.4.7.B.3	M07.D-S.3	M07.D-S.3.1.1 M07.D-S.3.2.1 M07.D-S.3.2.2 M07.D-S.3.2.3
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**Instructional Strategies:**

**Assessments:**

Cooperative groups Lecture Note Taking	Problem solving activities Hands-on activity Math Binders Graphic Calculators	Math Binders Tests & quizzes Probability Project
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Course Title: Pre-Algebra A

Topic/Concept: Equations

Time Allotment: 18 Days

Unit Sequence: 10

**Major Concepts to be learned:**

1. Solve two-step equations. (10-1)
2. Solve multi-step equations. (10-2)
3. Solve two-step inequalities and graph the solutions of an inequality on the number line. (10-4)
4. Solve an equation for a variable. (10-5)

**Expected Skills to be demonstrated:**

1. Write or state a rule of a function.
2. Match a written situation to its numeric/algebraic expression.
3. Apply the concept of slope to direct variation. Representation of linear functions in various forms.

**PA Standards/Anchors:**

**Eligible Content:**

CC.2.2.7.B.3

M07.B-E.2

M07.B-E.2.1.1

M07.B-E.2.2.1

M07.B-E.2.2.2

M07.B-E.2.3.1

**Instructional Strategies:**

**Assessments:**

Cooperative groups  
Lecture  
Student Journals  
Note Taking  
Evaluating  
Graphic Calculators

Problem solving activities  
Performance task  
Hands-on activity  
Summarizing  
Math Binders

Quizzes and tests  
Math binders  
Open-ended questions